

CLAIMS:

What is claimed is:

1. A medical balloon at least a portion of which has at least three layers including
 - i) an inner layer made of a first material;
 - ii) an intermediate layer formed of a material selected from the group consisting of fluoropolymers and linear high density polyethylene; and
 - iii) an outer layer made of a second material;

wherein the intermediate layer is disposed between the inner and outer layers and the first and second materials differ from the material of the intermediate layer.
2. The medical balloon of claim 1 wherein the fluoropolymer is PTFE or EPTFE.
3. The medical balloon of claim 2 wherein the EPTFE has a node and fibril structure, the fibril being bent.
4. The medical balloon of claim 1 wherein the inner layer and the layers are each made from a material selected from the group consisting of thermoplastic materials, elastomeric materials and thermoplastic elastomeric materials.
5. The medical balloon of claim 1 wherein the intermediate layer extends over substantially the entire length of the medical balloon.
6. The medical balloon of claim 1 wherein the medical balloon is further characterized as having:
 - a proximal waist portion;
 - a proximal cone portion
 - a body portion;
 - a distal cone portion;
 - a distal waist portion;

wherein the intermediate layer extends over at least a portion of the body portion.
7. The medical balloon of claim 6 wherein the intermediate layer extends only over the body portion.
8. The medical balloon of claim 6 wherein the intermediate layer extends only over at least a portion of the proximal and distal cone portions.
9. The medical balloon of claim 7 wherein the intermediate layer extends only over at least a portion of the proximal and distal waist portions and body portion.
10. The medical balloon of claim 1 wherein the inner, intermediate and outer layers are coextensive with one other.

11. The medical balloon of claim 1 in laminated form wherein the inner layer is laminated to the intermediate layer and the intermediate layer is laminated to the outer layer.
12. The medical balloon of claim 1 wherein the intermediate layer is encapsulated by the inner and outer layers.
13. The medical balloon of claim 1 mounted on a catheter, the catheter having an inflation in fluid communication with the balloon.
14. A method of forming the medical balloon of claim 1 comprising the steps of:
 - i) providing a tube made of a material selected from the group consisting of fluoropolymers and high density polyethylene;
 - ii) coating the inside of the tube with a first material;
 - iii) coating the outside of the tube with a second materialwherein
the first and second materials are different from the tube material.
15. The method of claim 14 further comprising the step of stretching the tube at a predetermined temperature by applying a predetermined tension to the balloon.
16. The method of claim 14 further comprising the step of blowing the tube at a predetermined temperature and with a predetermined pressure.
17. The method of claim 14 where the first and second materials are elastomeric.
18. A method of forming the balloon of claim 1 comprising the steps of:
 - i) providing first, second and third tubes, the second tube formed of a tube made of a material selected from the group consisting of fluoropolymers and high density polyethylene;
 - ii) inserting the first tube into the second tube;
 - iii) inserting the second tube into the third tube;
 - iv) inserting the first, second and third tubes into a balloon mold;
 - v) expanding the first, second and third tubes at a desired temperature so as to form a balloon.
19. A method comprising the step of coextruding first, second and third materials so as to form a balloon preform, the second material being PTFE, such that the PTFE forms a layer between the first and third materials.
20. The method of claim 19 further comprising the step of shaping the balloon preform to form a balloon.

21. The method of claim 20 wherein the balloon preform is shaped at a predetermined temperature by applying a predetermined tension to the balloon preform.
22. The method of claim 20 wherein the balloon preform is shaped at a predetermined temperature by blowing the balloon preform.
23. A method of forming the balloon of claim 1 comprising the steps of:
 - i) providing first, second and third tubes, the second tube formed of expanded PTFE;
 - ii) inserting the first tube into the second tube;
 - iii) inserting the second tube into the third tube;
 - iv) laminating the first tube and the second tube together;
 - v) laminating the second tube and third tube together so as to form at least a three tube laminate.
24. The method of claim 23 further comprising the step of laminating the first and third tubes together at least in part.
25. The method of claim 23 further comprising the step of blowing the laminate at a predetermined temperature.
26. The method of claim 25 wherein the first and second tubes and the second and third tubes delaminate upon blowing the balloon.
27. A medical balloon comprising:
 - i) an inner layer formed of an elastomeric material;
 - ii) an outer layer formed of an elastomeric material; and
 - iii) an intermediate layer formed of expanded PTFE disposed between the inner layer and the outer layer.
28. A medical balloon containing at least an inner layer, an outer layer and an intermediate layer, the intermediate layer encapsulated by the inner and outer layers, the inner layer formed of expanded PTFE.
29. A medical balloon having at least a portion of which has at least three layers,
 - an innermost layer,
 - an outer most layer disposed exterior to the innermost layer, and
 - an intermediate layer, disposed between the innermost layer and the outermost layer

wherein the intermediate layer is constructed of a material having a node structure connected by multiple fibers.

30. The medical balloon of claim 29 wherein the intermediate layer is formed of expanded PTFE.
31. The medical balloon of claim 29 wherein nodes are connected by bent fibrils.
32. The medical balloon of claim 29 wherein the intermediate layer is formed of high density polyethylene.